

An Analysis of Instructor Feedback on Student Work

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Feedback—the process of leaving remarks, questions, or markings on student work with the aim of enhancing student learning—is one of the more instructionally powerful but least understood features in instructional design (Cohen, 1985). Past studies offer inconsistent results on the features of feedback and little is known about how some of these factors benefit students' interactions with feedback and how deep a student engages in the revision process. This study aimed to learn more about both classroom perspectives of feedback between the instructor and the student. The main population included entry-level college mathematics instructors and students; we examined their feedback practices to gain a better understanding of what elements of feedback are being used and if they match the type of feedback that students report is most valuable. In this paper, we will only focus on the instructor study as that was the primary research question. Instructors graded and left feedback on a collection of student work samples while students completed a questionnaire that asked how they use feedback, how highly they value it, and which feedback type they find most useful. A thematic analysis was conducted on each comment and were classified into specific groupings. Results indicate that the instructor feedback was overall non-actionable but by a small margin. Students preferred actionable feedback, signifying a disconnect between the two populations.

Keywords: Instructor Feedback, Actionable Feedback, Feedback Literacy, Student Success

Introduction

Instructors across every discipline, especially those in common entry-level courses, act as one of the key players in a beginning college student's journey into their course of study, as well as possibly affecting more intrapersonal qualities such as personal identity and acceptance into the respective community they hope to join. Instructors serve as more than just educators; they play a pivotal role in students' personal and academic development. These instructors' actions and choices in the classroom can highly influence a student's path in college, even including their written communication to the student- feedback.

Researchers have defined feedback in various ways such as “information provided by an agent regarding aspects of one's performance or understanding” (Hattie & Timperley, 2007, p. 81) and also as any numerous procedures that are used to inform a student if their response is right or wrong (Kulhavy, 1977). Carless and Boud (2018) capture it with a small twist as “a process through which learners make sense of information from various sources and use it to enhance their work or learning strategies” (p.1). This definition goes beyond feedback solely being the role of teachers. It emphasizes the student component in making sense of the information and using it to revise their previously flawed understanding. We consider feedback to include teachers' comments, questions, and markings (X's, the addition of mathematical content) on students' written work.

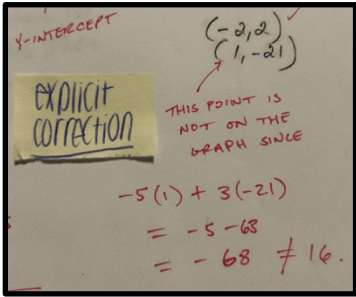
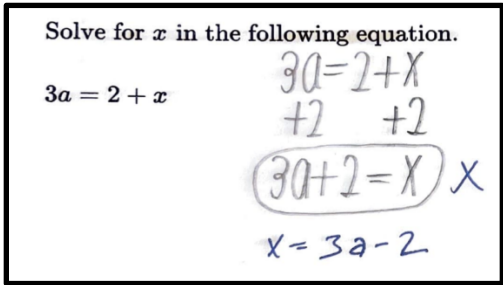
Multiple studies have identified teacher feedback as one of the most important instructional practices for promoting and advancing student learning if delivered correctly (Gentrup et.al., 2020; Hattie & Timperley, 2007; Shute, 2008; Griffiths et al., 2023). The last three words in that statement, “if delivered correctly”, are the foundation of this study. The effectiveness of teacher

feedback lies not only in its delivery, but also in its specificity, timeliness, and consideration of word choice (Shute, 2008). Some goals of providing feedback to students are to challenge them to adopt new perspectives (Forsythe & Johnson 2017) and to have learners engage with feedback and use these standards as they produce new work (Sadler, 1989).

Our goal was to observe the feedback practices that are occurring within entry-level mathematics courses and answer the question: What are the feedback types commonly used by instructors within a student homework sample?

Feedback Categorizations

Instructors can increase student agency by providing students with actionable feedback- if the message suggests a “course of action that would bring the submission closer to a correct response” (Bergman & Kercher, 2022, p.48). This type of feedback allows the student the opportunity to strategize about how to correct it themselves with some direction from the instructor (Griffiths et.al, 2023; Hattie & Timperley, 2007). Actionable feedback helps promote students’ independence (Lee & Hannafin, 2016) and communicates the teacher’s belief in the student’s ability to improve (Griffiths et.al., 2023). Non-actionable feedback does not provide the student much room to perform the correction themselves; it is either done for them or it is unclear where the student needs to continue. Below is an example of these two types of feedback in the binary system.

Actionable Feedback Example	Non-Actionable Feedback Example
 This comment includes the location of the error and why it is incorrect.	 This feedback sample includes the location of the error and the correct answer.

Is there a type of feedback that results in greater potential for learning? Students have different reactions to the same feedback message depending on their motivations, individual expectations, and what they hope to take out of the course so it may be difficult to satisfy each individual’s needs. Researchers appear to agree that effective feedback contains both elements of feedback: both actionable and non-actionable (Shute, 2008). A short comment on the location of an error may be better in certain situations, while a more detailed explanation may help in another case. The type of student error and the severity of the total errors in their work can affect whether actionable or non-actionable notes would be better suited.

Below, Table 1 lists each of the 9 feedback classifications we used for the coding scheme extended from Lyster & Ranta (1997) and Wahyuni (2023). A description of each feedback type is included as well as whether it represents actionable or non-actionable feedback.

Table 1. Nine Main Feedback Types Categorized in the Binary System

Feedback Type		Actionable or Non-Actionable?	Description
Explicit Correction		Actionable	Feedback includes the error detection and the reason why it was incorrect.
Recast	Recast 1	Non-Actionable	A correction is only provided (Recast 1) or all of the work is provided to them, with no reason as to why it was an error (Recast 2).
	Recast 2	Non-Actionable	
Metalinguistic Feedback		Actionable	Feedback is offered about specific word choices used; correction may allow students to use better terminology in the future.
Elicitation		Actionable	Feedback is in the form of a question or contains instructions on how to continue.
Indication		Non-Actionable	No words are included in this type of feedback such as underlining or circling.
Summative Feedback	Performance	Non-Actionable	A comment about a specific general performance/action on the assignment.
	Notice	Actionable	This feedback offers the student a comment about an action to be more aware of in the future.
Reference		Actionable	This directs a student to a certain reference, such as the instructor or a page in the textbook.
Clarification Request		Actionable/Non-Actionable	Comment suggests that the student's work is "ill-informed" and that a revision is encouraged.
Praise		Non-Actionable	Adds no mathematical comments; only offers positive words

Methods

This study involved 8 math instructors representing a mid-sized public university in the Pacific Northwest region of the United States. Data was collected during an in-person meeting involving grading and leaving feedback for 7 student work samples.

Student work samples from a College Algebra course were collected from past students of this institution. These students were not students of any of the instructors in the study; all were hypothetical students that instructors were assigned to grade and leave feedback. All identifiable information was redacted and not included in the study. Only erroneous work was included as a means to answer the call to action in a previous study that stated that "many studies fail to analyze error and correct responses separately" (Kulhavy, 1977, p. 221).

Seven student work samples were taken of the identical problem below on the topic of graphing linear functions. This topic was chosen to accommodate most instructors that teach below the Calculus level. Below is the problem that was selected.

“Given the following equation $-5x+3y=16$, find the slope and the y-intercept. Explain how you can use the slope and y-intercept to graph the equation. Sketch the graph of the equation.

Results

Instructor comments on student work samples were analyzed and flagged as one of the eleven detailed feedback categories. Figure 1 compares the frequency of each feedback type that was present out of all seven student work samples. In the figure, green represents the actionable feedback types, red non-actionable. 220 instances of feedback were present out of all instructors, more non-actionable comments overall.

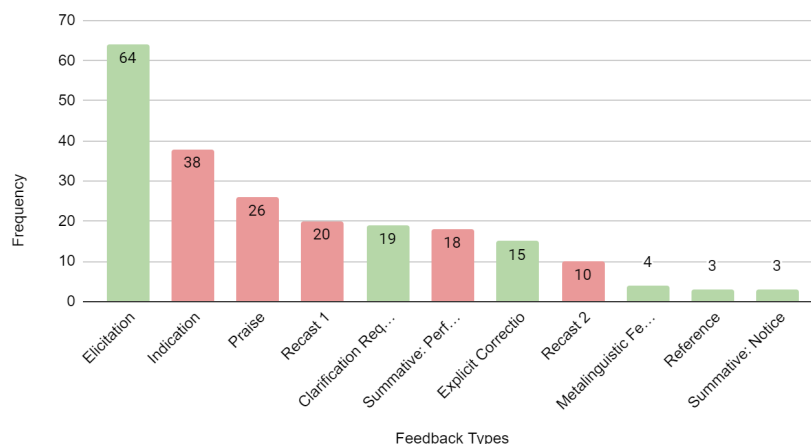


Figure 1. All Instructor Feedback Types Present

Discussion

In this study, instructors provided students with a mixture of actionable and non-actionable feedback and this relates to Shute (2008), where it was noted that effective feedback contains both elements: both actionable and non-actionable. Instructors mainly used Elicitation (actionable) out of all feedback types. Amrhein & Nassaji (2010) found that there exists a dissonance between the feedback that students prefer, actionable feedback, compared to the non-actionable feedback that teachers find more desirable for students. As previous literature found dissonance, this study complemented the Amrhein & Nassaji results and found a disconnect between the student's preferences and feedback received at this institution.

Instructors altogether used slightly more non-actionable feedback types (112 non-actionable/108 actionable comments), but there was quite an even split with non-actionable comments occurring more frequently. These non-actionable feedbacks are found to not contribute to student revision. Students in this study were found to prefer actionable feedback to better understand where their reasoning was incorrect and why.

This study presents a possible way to track and analyze the feedback provided by instructors while attending to students' preferences. The feedback categorization can be used as a professional development topic that can allow instructors to be more intentional with their feedback decisions and provide more effective feedback to students for revision purposes.

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